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GREEK AND ROMAN WEATHER LORE OF TWO DESTRUCTIVE AGENTS, HAIL AND DROUGHT

(*Concluded from page 23*)

DID GREEKS AND ROMANS EVER BECOME TOO SCIENTIFIC TO PRAY FOR RAIN?

Prayer has always been so obvious a means of seeking relief from drought that if would be strange if peoples ever failed to resort to it, but the following conclusions were reached by Professor M. H. Morgan[285]:

From these summaries it seems obvious that rain-prayers and rain-charms were (to use no stronger term) unusual in the best period of Greek and Roman culture, that is to say, in the fifth and early part of the fourth centuries B.C. in Greece, and during the fifty years which lie on each side of the beginning of the Christian era in the history of Rome. We ought not to be surprised at reaching this conclusion, for these were periods in which early beliefs and primitive explanations of natural phenomena found little favor. . . .

In Pausanias there are records of a number of places where religious services were conducted in order to secure rain. Professor Morgan notes[286] that such passages are "accompanied by no statement that worship was actually going on at these places at the time of writing".

Professor Morgan[287] collected from early authors examples of the expression 'Zeus rains', and noted that no author, from Homer to Theophrastus, says anything about prayers to Zeus for rain. He held that no passage in which Iuppiter Pluvius is named can be used to prove that the Romans ever prayed to this god for rain[288]. I might add that the words *aquae Iovis* in Horace, Carmen Saeculare 31, are a literary commonplace[289]. I am quite willing to believe, however, that the following verses from Horace[290] described ceremonies, perhaps those of the Ambarvalia[291], which he himself had seen and which might be considered commonplace:

> Poscit opem chorus et praesentia numina sentit,
> *caelestis implorat aquas* docta prece blandus,
> avertit morbos, metuenda pericula pellit,
> impetrat et pacem et locupletem frugibus annum.
> Carmine di superi placantur, carmine Manes.

In apparent agreement with Professor Morgan's conclusions is Seneca's implied contrast[292] between the knowledge of his own times and that of 'untutored' (*rudis*) antiquity, which believed that rain could be attracted or repelled by incantations.

Yet, whatever the literary records may show or fail to show, it seems to me foreign to reason to suppose that there were centuries or parts of centuries when Greeks and Italians seldom prayed for rain[292a] or seldom resorted to magic in order to induce rain. I suspect that the only periods in European history when prayers and other religious services for rain have been infrequent have been periods when rain has not failed. Among peasants and other illiterate persons old habits were (and are) too ingrained to permit a lacuna in the exercise of them.

Lucretius[293] tries to destroy belief in divine control of the weather by asserting that the captain's prayers during storms do not cause any cessation of their fury, but he was trying to uproot a firmly fixed idea, namely that prayer has some effect in changing the weather[294].

Ovid[295] advises the lover whose affection is unrequited to go far away. He is to compel his unwilling feet to run and is not to pray for rain. If in Ovid's day nobody prayed for rain, there would not be much point to the injunction.

On being told by Socrates that there was no Zeus, Strepsiades protested, 'But who rains?'[296] If the Greeks and the Romans of certain periods did not pray to Zeus for rain, we might ask, in the manner of Strepsiades, 'To whom did they pray?'

If the number of recorded examples of prayers for rain varies for certain periods of antiquity, I believe that this indicates the widening knowledge of those in control of the literary output rather than any raising of the general level of intelligence. Polybius[297] sought for natural explanations of things, yet he attributed to the gods drought and frost and other manifestations of nature. He does not come within the dates specified by Professor Morgan, but I should not wish the task of finding any period of antiquity when the masses of the people had more meteorological knowledge than he possessed and were less superstitious about the weather than he was. The astronomer Manilius [298]thinks that knowledge (*ratio*) has taken the thunderbolt from the

[285]108 (see note 1, above).
[286]*Ibidem*, 107. [287]83–84 (see note 1, above).
[288]98–100 (see note 1, above).
[289]Horace is doubtless translating Διὸς ὄμβρος, Homer, Iliad 5.91. From this expression to Ζεὺς Ὄμβριος there is but a short step. Perhaps only metrical convenience kept Homer from using the latter expression. It seems to me strange that the first extant example of the Latin equivalent is as late as Tibullus 1.7.26. See K. P. Smith on this passage, in The Elegies of Albius Tibullus, 330–331 (New York, American Book Co., 1913). <See also my addition to note 359, below. C. K.>.
[290]Epistulae 2.1.134–138.
[291]The wording of verses 3–4 recalls the wording of a prayer recorded by Cato, De Agri Cultura 141.1–3.
[292]Naturales Quaestiones 4.7.3.

[292a]After I had completed this paper, I found that Professor Morgan's article is criticized severely by O. Gruppe, Bericht über die Literatur zur Antiken Mythologie und Religionsgeschichte aus den Jahren 1898–1905, 336–377, Supplementband of Jahresbericht über die Fortschritte der Klassischen Altertumswissenschaft, 137 (1908). He says, among other things, that Professor Morgan had too little material and that the starting-point of his investigation was not well chosen. He makes the following general criticism: "Es ist eine irrige Voraussetzung, dass die Chronologie einer Entwicklung sich aus der Chronologie der Zeugnisse ergebe".
[293]5.1226–1232.
[294]I cited in C. W. 18.157 B, 25.216 C-D, 27.28 B-C many expressions of disbelief in popular ideas about the weather. I shall add a number of others in another connection in a future paper. They are not confined to any one period.
[295]Ovid, Remedia Amoris 214–219.
[296]Aristophanes, Nubes 367–368.
[297]36.17.2–4. [298]1.104.

hand of Zeus. It may have done so, but, if it did, it did so only in the case of the educated few. It is conceivable, however, that there may have been less hocus-pocus in regard to the weather during the best days of Greece and Rome.

I was entirely unconvinced when I read the following words in a periodical in 1924[299]:

> . . .If you teach the public in the newspaper every week-day that the weather is fixed through complicated laws, that if the barometer is rising fair weather is probable, while rain may be expected if it is falling, you cannot expect them to believe on Sunday that the humidity of the atmosphere will be affected by prayer.

The clippings which I have quoted are enough to prove that prayer is still widely resorted to in times of drought. The terrible drought of the summer of 1930 inspired one Christian periodical to ask a number of prominent theologians whether prayer changes the weather[300].

SACRIFICE AS A REMEDY FOR DROUGHT

For drought, as for other afflictions, including calms and unfavorable winds[301], sacrifice was the great panacea[302]:

> When Numa was king, the harvest did not answer to the labour bestowed on it; the husbandman was deceived, and his prayers were offered in vain. For at one time the year was dry, the north winds blowing cold; at another time the fields were rank with ceaseless rain; often at the first sprouting the crop balked its owner, and the light oats overran the choked soil, and the cattle dropped their unripe young before the time, and often the ewe perished in giving birth to her lamb. There was an ancient wood, long unprofaned by the axe, left sacred to the god of Maenalus. He to the quiet mind gave answers in the silence of the night. Here Numa sacrificed two ewes. The first fell in honour of Faunus, the second fell in honour of gentle Sleep: the fleeces of both were spread on the hard ground. Twice the king's unshorn head was sprinkled with water from a spring; twice he veiled his brows with beechen leaves. He refrained from the pleasures of love[303]; no flesh might be served up to him at table; he might wear no ring on his fingers. Covered with a rough garment he laid him down on the fresh fleeces after worshipping the god in the appropriate words. Meantime, her calm brow wreathed with poppies, Night drew on, and in her train brought darkling dreams. Faunus was come, and setting his hard hoof on the sheep's fleeces uttered these words on the right side of the bed: "O King, thou must appease Earth by the death of two cows: let one heifer yield two lives in sacrifice." Fear banished sleep: Numa pondered the vision, and revolved in his mind the dark sayings and mysterious commands. His wife, the darling of the grove, extricated him from his doubts and said, "What is demanded of thee are the inwards of a pregnant cow." The inwards of a pregnant cow were offered; the year proved more fruitful, and earth and cattle yielded their increase.

It seems, says Origen[304], that death willingly suffered by a just man will ward off the demons which cause bad weather. One thinks of the case of Molpis[305], who, after a long period of rainless weather in Elis, offered himself as a victim to Zeus Ombrios (Iuppiter Pluvius), whereupon rain at once descended. In gratitude his countrymen built a temple in honor of the god and set up in it a statue of their benefactor[306].

There are other examples of self-sacrifice in behalf of a people suffering from drought. When the land of Thebes was parched and the trees were bare of leaves, an oracle of the Gortynian Apollo declared that the country could be delivered only by the voluntary sacrifice of two virgins. On learning of this two girls willingly took their own lives[306a].

The frequency of such legends, among which the traditional sacrifice of Iphigenia at Aulis may be included, suggests that formerly the Greeks used actually to sacrifice maidens in great emergencies, such as plagues and prolonged droughts, when ordinary sacrifices had proved ineffectual[306b].

Like other nations, the Greeks found substitutes for human sacrifice as their civilization became more refined. During a dearth of crops among the Chalcidians one man out of every ten was dedicated to Apollo, but these intended victims were allowed to emigrate, along with some other citizens, with whom they founded the town of Rhegium[307].

It is worth noting that Hera was associated with Zeus in sacrifices made upon Mount Arachnaeon, above Lessa, in an effort to relieve drought[308].

During excessive heat and drought the Athenians offered to the Seasons boiled rather than roasted meat. By this means they secured for their crops moderate warmth and seasonable rains[309]. The underlying conception was that the water in the pot was transmitted through the boiled meat to the deities[310], but in primitive reasoning rain has been attributed to a boiling process and among primitive peoples boiling is imitated by magical rites[311]. A good example of such rain-making is to be found in a collection of Negro stories from our own land:

> "De cunjah man lafft en lafft, en he put on his bigges' pot, en fill it wid his stronges' roots, en b'iled it, 'tel bimeby de win' blowed en blowed tel it blowed down de live-oak tree. Den he stirred some more roots in de pot, en it rained en rained 'tel de water run down de ribber bank en wash Dan's life cha'm inter de ribber. . . . "[312]

When there happened to be an unusually severe drought in Egypt, with attendant diseases and other evils, the priests, amid great stillness, would conduct into a dark place some of the animals they honored. If terrifying the beasts did not relieve conditions, the priests consecrated the animals and offered them up as victims. Plutarch[313], who evidently did not thoroughly understand the ceremony, looked upon it as a method of punishing the evil god, or at least as some form of emergency purgation.

There is extant an inscription that was set up on the Island of Cos in the third century before Christ by a religious association in honor of officials who conducted sacrifices in order to influence 'Rainy Zeus'[314].

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[299]The Atlantic Monthly 134 (1924), 164.
[300]Does Prayer Change the Weather?, The Christian Century 47 (1930), 1084–1086.
[301]See C. W. 27.2–3 A, 10 B-C.
[302]Ovid, Fasti 4.641–672. I give the translation by Sir James G. Frazer, in The Loeb Classical Library.
[303]See note 262, above.
[304]Contra Celsum 1.31 (Migne, P. G., 11.717, 719).
[305]Lycophron, Alexandra 159–160.
[306]Tzetzes on Lycophron as cited in note 305, above.
[306a]Ovid, Metamorphoses 15.685–689; Antoninus Liberalis 25.
[306b]Sir James G. Frazer, Apollodorus 2.119 (see note 233, above).
[307]Strabo 6.1.6. [308]Pausanias 2.25.10. [309]Athenaeus 656 A.
[310]Frazer, The Magic Art, 1.310.
[311]Hamilton, 218 (see note 153, above).
[312]Charles W. Chesnutt, The Conjure Woman, 176 (Boston, Houghton Mifflin and Co., 1899). [313]Moralia 380 C-D.
[314]Charles Michel, Recueil d'Inscriptions Grecques, No. 1004 (Brussels, H. Lamertin, 1900).

Miss Harrison[315] thinks that the statement of Pausanias[316] that 'When Erechtheus was king of the Athenians, the Ox-Slayer slew an ox for the first time on the altar of Zeus Polieus' has not received sufficient attention. After a discussion of the meaning of this remark by Pausanias she concludes[317] that "...The Bouphonia was an appeal to the sterner powers of the sky, to thunder, and lightning, and the rain-storm".

PROCESSIONS

Among the impressive religious ceremonies of antiquity were processions, which were generally held amid great calamities, but one of the most formal of them, the Suovetaurilia, was intended to secure immunity from disasters and from malevolent powers. During it Father Mars was invoked to protect the farm and its owners and animals in many ways, among them by keeping away blighting and destructive weather[318].

In times of drought in Italy matrons might wend their way through the streets of a town to a temple and invoke Jupiter for rain. That there might be no restricting or hampering influence they first removed their sandals and unbound their hair. From this ceremony people returned *udi tanquam mures*[319].

The success of the services that is implied by the last three words has been surpassed within recent years in our own country. Part of a clipping from The Detroit Free Press, July 17, 1923, reads as follows:

Some of the farmers were dubious about praying for rain as 15 years ago when they prayed for rain they got a cloudburst which washed out many crops.

The ceremony of the matrons was doubtless different from the one called *nudipedalia*, which is thus described by Tertullian[320]: ...cotidie pasti statimque pransuri, balneis et cauponiis et lupanaribus operantibus, aquilicia Iovi immolatis, nudipedalia populo denuntiatis, caelum apud Capitolium quaeritis, nubila de laquearibus exspectatis, aversi ab ipso et deo et caelo....In another passage[321] Tertullian reveals admiration for the conduct of pagans when heaven is benumbed (*stupet*) and there is parching weather. At such times the magistrates laid aside their 'purple' robes, reversed their *fasces*, raised their voices in prayer, and offered a victim. It is doubtful whether this ceremony ever took place in Rome itself[322].

At Gaza a procession was turned to Christian use. When the pagans, who had attributed a long drought to the arrival of Saint Porphyrius, flocked to the shrine of Marnas, 'master of the rains', but failed to secure relief, the Christians resorted to prayers, genuflections, and a procession with a cross. When this means was effective, the pagans cried, 'Christ is the only god. He alone has conquered'[323].

In the Vita S. Pauli Junioris (he died in 956 A.D.) there is described a procession up Mount Latmos when a drought was harassing Miletus[324]. On the top of the mount was a large stone which had long been regarded as sacred. Up the difficult ascent to it a procession of not fewer than forty persons wended its way singing sacred hymns. There is a touch of unconscious humor in a second, more definite, reference to the number of participants as 'forty, without counting boys and women'[325]. We are not told whether or not this special mission was successful.

Processions continue to be an effective means of securing rainfall in classical countries. Of one on the Island of Tinos an American writer says[326]:

Another story I was able to confirm as founded on truth. There had been a long drought, and the icon was carried to the top of a hill, where prayers were held, with the result that the floodgates of heaven were opened and the rain fell in torrents; surely, enough to confirm belief.

Still more instructive are the words of a native Italian in regard to such ceremonies[327]:

This superstition of country-people is still common, in an almost unchanged form, in Sicily. In my town, a few miles from Palermo, nearly every year, in spring and in autumn, the farmers have recourse to a saint, the Madonna delle Grazie, hoping thus to obtain rain for their parched fields. On such occasions, men and women, the most devout, barefooted, go in procession, with a priest at their head, praying for rain all along the way, to the Church of the Madonna, which is situated in the country-side, about half a mile from the town; they carry the image of the saint to the town and processionally go about through the streets, sincerely believing that the Madonna will hearken to their prayers and send the needed rain. Old people say that often rain has fallen while they were carrying the saint in procession....[328]

Similar services have taken place in our own country. The following account[329] has its setting in Santa Fe, an old seat of the Franciscans:

A few years ago when the rain had not wet the earth for weeks and weeks, a religious procession was held as a special plea for relief: a pilgrimage of the multitude from the church to a holy shrine on the outskirts of the village. The throngs marched in the heat along the dust of the road to the chapel and back—but no rain came. The faithful stoically traversed the heated Holy Way a second time—and no rain came.

The few men who carried the sacred throne dashed from the churchyard with angry shouts before any one could prevent them, kidnapping the Virgin! Her golden tinsel was strewn on the street. Her holy image was hurled into the sandy river-bed by the faithless cowards.

And Heaven was so agitated over the blasphemous affair that it gathered its clouds, hurled its thunderbolts, and poured its rain down in torrents, bringing to an end one of the longest and most terrible droughts that had ever been known.

[315] Jane Ellen Harrison, Themis[2], 169 (Cambridge: At the University Press, 1927).
[316] 1.28.10. [317] 174 (see not 315, above).
[318] Cato, De Agri Cultura 141.1–3.
[319] Petronius 44. There is no clear proof that such a procession was ever held in Rome. See Morgan, 100–101.
[320] Apologeticus 40.14. [321] De Ieiuniis 16.
[322] See Morgan, 101–103.
[323] Marcus Diaconus, Life of Porphyrius 19–21. For a fuller version of this story and for other references to drought see THE CLASSICAL WEEKLY 18.165 A-B.
[324] Analecta Bollandiana 11 (1892), page 53 (§ 18).
[325] *Ibidem*, page 55 (§ 19).
[326] G. Horton, Home of Nymphs and Vampires, 183 (The Bobbs-Merrill Co., Indianapolis, 1929).
[327] Anthony Rini, Popular Superstitions in Petronius and Italian Superstitions of To-day, C. W. 22.86.
[328] In Charles Read, The Cloister and the Hearth, Chapter 55, there is described the Venetian custom of carrying a picture of the Virgin in procession in order to bring rain.
[329] The Outlook 138 (1924), 384. The Outlook quotes this from a periodical of Santa Fe with the curious title "laughing horse" <the title is made worse by the absurdity of printing the title throughout in small letters. C. K.>. I should not think of using such a source in a subject other than folklore. The quotation contains nothing, however, which does not have the earmarks of verisimilitude.
With the last paragraph one may compare a statement in Frazer, The Magic Art, 1.300: "At Palermo they dumped St. Joseph in a garden to see the state of things for himself, and they swore to leave him there in the sun till rain fell".

Processions to invoke rain are remote from the thoughts and experiences of most of us, but they seem more real when we find a passage about such a procession in the biography of a prominent American professor and inventor[329a]:

. . .The location of the original church <of Idvor> was marked by a little column built of bricks and bearing a cross. In a recess on the side of the column was the image of St. Mary with the Christ Child, illuminated by a burning wick immersed in oil. The legend was that this flame was never allowed to go out, and that a religious procession by the good people of Idvor to the old monument was sure to avert any calamity, like pestilence or drought, that might be threatening the village. I took part in many of these processions to the old deserted village. . . .

MAGIC AND DROUGHT

Since drought did so much injury and since many of its effects lasted long after rain had fallen, it is not strange that magic was resorted to in an effort to cause nourishing rains.

Some stones possessed the magical power of bringing rain to end drought[330]. If one takes smooth, green jasper and offers sacrifice to the gods, their hearts are warmed and they 'sate' the drought-ridden fields with clouds, and cause abundant rain[331]. Coral crushed and sown with Demeter's seed will drive off the hot weather that drinks the milk of the grain[332].

Another magical stone was the *lapis manalis*, which was kept outside the Porta Capena of Rome near the Temple of Mars. The manner in which it was used will be described later[333].

A Greek traveler in India is said to have seen two jars of black stone, one of which contained rains, the other winds. When India was suffering from drought, the jar containing rains was opened[334].

On one occasion Attica was freed from a drought after the magical *iynx* was moved[335]. The device was evidently a wheel upon which the bird was fastened.

The most famous stone mentioned in connection with drought is the *lapis manalis*, which was kept 'outside the Porta Capena near the Temple of Mars'[336]. It is said that the pontifices drew it through the city as often as there was a dry spell[337] and that rain followed forthwith (*insequebatur pluvia statim*)[338].

We are told of this stone that, quod aquas manaret, manalem lapidem dixere[339]. Something about it suggested to Varro[340] an *urceolus*, and he adds, unde manalis lapis appellatur in pontificialibus sacris, qui tunc movetur cum pluviae exoptantur. Evidently the stone was hollow and water trickled or was shaken from it as it was carried[341].

A vase may have been used in a somewhat similar way in a rain-making ceremony at Crannon in Thessaly. On a seal of the city two crows are represented as perching on a bronze chariot. When a drought occurred, people shook the chariot and prayed for rain[342]. Coins of Thessaly still extant show a large *amphora* resting on a chariot[343]. It has been conjectured that, when the chariot was shaken and made a noise like thunder, water spilling from the vase imitated rain[344]. The ceremony was, then, an attempt to induce rain by sympathetic magic.

According to modern folklore, on the Island of Amorgos God himself shakes a bowl to produce rain. This we learn from the words of an English traveler[345] in the Cyclades:

It was a wet morning, and the good priest would willingly have stopped at home had I not urged him to start. "God is emptying His bowl," my parishioners would say,' and then he explained the prevalent idea that God, like Zeus of antiquity, has a bowl or receptacle full of water, which He shakes, and then clouds come out; these fall to the earth as rain or snow.

Examples of imitation of thunder and lightning[346] and of falling rain[347] are common enough in folklore. An amusing instance of causing rain by drenching was reported in The Chicago Daily Tribune, August 19, 1926:

Tokio, Aug. 18.—The secretary of the American embassy was motoring through the village of Hachioji, near Tokio, on Sunday and was suddenly drenched with water by a crowd before a wayside shrine. Believing an insult was intended, the secretary reported the incident to the foreign office. An investigation reveals <*sic!*> that the crowd was performing a ceremony including throwing water on the first passerby. Hachioji officials were much chagrined upon learning the identity of the person drenched and apologized.

FOUNTAINS AND STREAMS

One of the most interesting rain-bringing ceremonies was held on Mount Lycaeus in Arcadia[348]:

If there is a long drought, and the seeds in the earth and the trees are withering, the priest of Lycaean Zeus looks to the water and prays; and having prayed and offered the sacrifices enjoined by custom, he lets down an oak branch to the surface of the spring, but not deep into it; and the water being stirred, there rises a mist-like vapour, and in a little the vapour becomes a cloud, and gathering other clouds to itself it causes rain to fall on the land of Arcadia[349].

[329a] Michael Pupin, From Immigrant to Inventor, 4 (New York, Scribner's, 1922). Professor Pupin considered himself a Serbian. At present Idvor is within the limits of Jugoslavia.

[330] See C. W. 18.163 D.

[331] Orphei Lithica 267–270 (see note 41, above).

[332] *Ibidem*, 594–596.

[333] See the text connected with note 341, below.

[334] Philostratus, Vita Apollonii 3.14.

[335] Marinus, Proclus 28. Compare Theocritus 2.17.

[336] Festus 115 (W. M. Lindsay's edition [Leipzig, Teubner, 1913]).

[337] Daniel-Servius on Vergil, Aeneid 3.175. Compare Festus 2.

[338] Festus 115. [339] *Ibidem*.

[340] As quoted by Nonius, under *trulleum*, 3.877 (W. M. Lindsay's edition [Leipzig, Teubner, 1903]).

[341] For references to the literature see Morgan, 105. See also Frazer, The Magic Art, 1.310, note 3, and H. J. Rose, Primitive Culture in Italy, 57 (London, Methuen, 1926). Morgan notes (102) that there is no evidence that this stone was ever carried in the ceremony called *nudipedalia* (see the text connected with note 320, above). In C. W. 25.205 A, 206 A I gave other references to the literature about this stone.

[342] Antigonus, Historia Mirabilium 15.

[343] Percy Gardner, A Catalogue of the Greek Coins in the British Museum, Thessaly to Aetolia, Plate 2, Figure 13 (London, Printed by Order of the Trustees, 1883).

[344] Adolf Furtwängler, Meisterwerke der Griechischen Plastik: Kunstgeschichtliche Untersuchungen, 259 (Leipzig and Berlin, Giesecke und Devrient, 1893). See also Frazer, The Magic Art, 1.309, note 6.

[345] Bent, 488 (see note 278, above).

[346] See C. W. 18.157 C.

[347] See Jacob Grimm, Teutonic Mythology, Translated, From the Fourth German edition, by J. S. Stallybrass, 3.1086–1087 (London, George Bell and Sons, 1883). On drenching persons or idols with water as a rain-charm see J. Rendel Harris, Notes from Armenia, in Illustration of *The Golden Bough*, Folk-Lore 15 [1904], 429–435); Sarat Chandra Mitra, A Rain Ceremony from the Murshidabad District of Bengal, Folk-Lore 9 (1898), 278.

[348] Pausanias 8.38.4. I give the translation by Sir James G. Frazer, Pausanias's Description of Greece, 1.423 (London, Macmillan, 1898).

[349] For references to the critical literature which has grown up about this passage see Hamilton, 356 (see note 153, above).

Perhaps other ceremonies were held about small bodies of water during dry periods. An American scholar[350] has made the following cautious statement:

. . .It appears to me very probable that in times of drought both Greeks and Romans were in the habit of praying to the divinities of the well-springs, fountains, and sources of streams themselves, rather than to Zeus or Jupiter or any other god for rain,—that is, that they offered vows and prayers to the Nymphae or Lymphae and similar divinities. . . .[351]

Miss Harrison[352] concludes that the water-bearing Danaides had once been well-nymphs whose duty it was to water and fertilize thirsty Argos.

On meeting Hypsipyle in a wood in time of drought Adrastus seems to pretend that she is a water nymph, and he addresses her accordingly for aid against the drought[353]:

Da fessis in rebus opem, seu turbidus amnis,
seu tibi foeda palus <est>; nihil hac in sorte pudendum,
nil humile est; tu nunc undis (Pluvioque rogaris
pro Iove), tu refugas viris et pectora bellis
exanimata reple. . . .

In Italy nymphs of springs and other water-deities were appealed to for relief from drought. Varro[354] prayed to Lympha and Bonus Eventus because without water (evidently rain) all agriculture is barren and without happy issue. Daniel-Servius[355] tells us that sacrifices were made to the fountain of Iuturna when rain failed (*propter aquarum inopiam*).

There seems to be enough evidence[356] to show that

. . .Iuturna and the nymphs were worshipped by the Romans as water-deities from about the middle of the third century B.C. to at least the end of the first century B.C. . . . .

Doubtless modern Greek rain-bringing ceremonies at wells and springs have a long history behind them:

In Thessaly and Macedonia it is customary in times of prolonged drought to send a procession of children round to all the wells and springs of the neighbourhood. At their head walks a girl adorned with flowers, whom they drench with water at each halting-place while singing this invocation[357]:

Perperia, all fresh bedewed,
Freshen all the neighbourhood;
By the woods, on the highway,
As thou goest, to God now pray:
O my God, upon the plain,
Send thou us a still, small rain;
That the fields may fruitful be,
And vines in blossom we may see;
That the grain be full and sound,
And wealthy grow the folks around;
Wheat and barley,
Ripen early,
Maize and cotton may take root,
Rice and rye and currants shoot;
Gladness in our gardens all,
For the drought may fresh dews fall;
Water, water, by the pail,
Grain in heaps beneath the flail;
Bushels grow from every ear,
Each vine-stem a burden bear.
Out with drought and poverty
Dew and blessings may we see!

THE NILE AS A SUBSTITUTE FOR RAINY ZEUS

In Egypt drought was caused by the failure of the waters of the Nile to cover the land. Herodotus[358] calls attention to the lack of rainfall in the upper parts of Egypt. The remarks of Seneca[359] in regard to the rôle of the great Egyptian river are exceedingly interesting:

Hunc nobilissimum amnium natura extulit ante humani generis oculos et ita disposuit ut eo tempore inundaret Aegyptum quo maxime usta fervoribus terra undas altius traheret tantum usura[359a] quantum siccitati annuae sufficere possit. Nam in ea parte quae in Aethiopiam vergit aut nulli imbres sunt aut rari et qui insuetam aquis caelestibus terram non adiuvent. Unam, ut scis, Aegyptus in hoc spem suam habet: proinde aut sterilis annus aut fertilis est, prout ille magnus influxit aut parcior. 'Nemo aratorum respicit caelum': quare non cum poeta meo iocor, et illi Ovidium suum impingo, qui ait nec Pluvio supplicat herba Iovi?

Egyptians of the time of Herodotus were dumbfounded on learning for the first time that Greece, unlike their own land, was not irrigated and was at the mercy of the divine will for a supply of water. They thought that, if Jupiter should some time withhold rain, the population would perish[359b].

The Nile swept over its banks when the sun was in the constellation of Leo. For this reason sculptured representations of lions' heads were used as spouts for fountains in Egypt[360]. The custom spread to Greece and Italy, and ultimately to us[361].

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[350]Morgan, 108.

[351]See Floyd G. Ballentine, Some Phases of the Cult of the Nymphs, Harvard Studies in Classical Philology 15 (1904), 77–78.

[352]Jane E. Harrison, Prolegomena to the Study of Greek Religion, 620 (Cambridge: At the University Press, 1903).

[353]Statius, Thebais 4.757–761. I give the reading of the edition by H. W. Garrod (Oxford: At the Clarendon Press, 1906). On this passage see Morgan, 99. <Professor Morgan has nothing to say about the text or the punctuation of this passage. He prints only *Da fessis. . . pro Iove*, presenting the last part thus: "nil humile est: 'tu nunc ventis pluvioque rogaris pro Iove' ". I confess that I cannot interpret Professor Garrod's text. In a note to his text he says, "undis *ego* (ventis *codd.*) *et interpunctionem mutavi*, cf. *Class. Rev.* xviii.1". Neither on page 1 nor in Number 1 of The Classical Review 18 does Mr. Garrod speak of this passage. In The Classical Review 18.300 he devotes six lines to the passage, saying ". . . Perhaps tu nunc undis—pluvioque rogaris pro Jove—tu refugas etc." There is no help in such a note to interpretation of the passage as a whole.

In The Loeb Classical Library version of Statius, 1.564 (1928), Mr. J. H. Mozley prints nil humile est; tu nunc Ventis pluvioque rogaris pro Iove, tu refugas vires. . . reple. The manuscripts give *ventis; undis* is an emendation by Mr. Garrod (see the preceding paragraph. This is a very attractive emendation, I admit, but it is an arbitrary emendation). I should myself set a parenthesis mark before *nihil* and another after *Iove*. I take *pro* in 758 with *ventis* (*undis*) as well as with *Iove*, and render by 'to you now in place of the winds and Zeus, god of the rains, appeal is made'. The words I set in the parenthesis constitute an effective pause in the midst of the prayer, begun at *Da*, 757. They give the ground for the whole appeal. In a word, *tu. . . Iove = tu enim. . . rogaris*, or *namque tu. . . rogaris*. . . . C. K.>.

[354]Varro, Res Rusticae 1.1.6. See also St. Augustine, De Civitate Dei 4.22, 34, 6.1. [355]On Vergil, Aeneid 12.139.

[356]Floyd G. Ballentine. 93 (see note 351, above). See also 90–97.

[357]Lucy M. J. Garnett, The Women of Turkey and Their Folk-Lore, The Christian Women, 123–124 (London, David Nutt, 1890). Compare B. Schmidt, Das Volksleben der Neugriechen und das Hellenische Alterthum, 30 (Leipzig, Teubner, 1871).

[358]3.10.

[359]Naturales Quaestiones 4.2.1–2. <The words *Nemo. . . caelum* evidently occurred in a poem by Lucilius, the friend to whom Seneca dedicates the Quaestiones Naturales. The words that Seneca ascribes to Ovid are part of Tibullus 1.7.26. Professor K. P. Smith, in his note on this passage, states that *Iuppiter Pluvius* is the only Tibullan expression to be found in the ordinary speech of modern times. C. K.>.

<[359a] *usura* is the reading in the Teubner text of A. Gercke (1907). In the Teubner text by Friedrich Haase (1913) the reading is *hausura* (with *ha* in Italics). C. K.>.

[359b]Herodotus 2.13.14. See also 2.22, 25. Tibullus notes (1.7.26) that, because of the Nile, Egypt did not have to pray to Zeus for rain. See also Euripides, Helena 1–3; Apollonius Rhodius 4.270–271; Cicero, De Natura Deorum 2.130; Lucan 8.147, 444–447; Valerius Flaccus 5.423; Ammianus Marcellinus 22.15.6; Carminum Minorum Corpusculum 28 (47). For a wonderful ancient hymn extolling the Nile as the giver of life and the bringer of food see A. E Wallace Budge, The Dwellers on the Nile, 105 (London, The Religious Tract Society, 1926).

[360]Plutarch, Moralia 670 C.

[361]The Works of Sir Thomas Browne, Edited by Geoffrey Keynes, 3.145–146 (London, Faber and Gwyer, 1928).

For countries other than Egypt Zeus, according to Isocrates[362], was the lord of rains and droughts. Busiris himself had ample reason to feel contented when he saw some lands flooded after excessive rains and some parched from too much heat[363].

THE LEGEND OF CLAUDIA QUINTA

A drought provided the setting for one of the most curious legends of Rome[364]. After the ship which had been sent to bring the Mother of the Gods from Mount Ida to Rome had escaped the perils of the open sea, it grounded at the mouth of the Tiber.

The men wearied their arms by tugging lustily at the rope; hardly did the foreign ship make head against the stream. A drought had long prevailed; the grass was parched and burnt; the loaded bark sank in the muddy shallows. Every man who lent a hand toiled beyond his strength and cheered on the workers by his cries. Yet the ship stuck fast, like an island firmly fixed in the middle of the sea[365].

It was in this emergency that Claudia Quinta appeared, eager to retrieve a reputation which had suffered from gossip. Her failure to start the ship was to be adjudged a sign of guilt, her success a proof of innocence. The goddess yielded to her prayer, and the ship followed the maid as she gently drew the rope.

ANGER AND HOSTILITY MANIFESTED TOWARD HEAT AND DROUGHT

In previous papers I gave several examples of fighting the elements[366]. Demonstrations of hostility were made against hot weather also, and against its chief cause, the sun.

As we have seen, farmers abused 'those responsible' whenever there was too much or too little rain for their crops[367]. The Atarantes reviled the sun in most shameless fashion when it parched both them and their country[368]. Strabo[369] tells us that members of an Ethiopian tribe swore at the rising sun as being bent upon burning them and warring upon them. Heracles shot an arrow at the sun when it made him too hot[370].

That mild dissatisfaction with the Greek deity was doubtless often expressed we may infer, if the garrulous man in the 'Characters' of Theophrastus[371] is representative. He insisted that, if Zeus would send more water, the crops would be better off. In the same work[372] the grumbler is provoked at Zeus not for not raining, but for having taken so long to send the rain.

If our records from antiquity were fuller, we could doubtless find a close parallel to the angry exhibition of displeasure shown by the hero of a recent novel toward the 'Old Man in Heaven', who had ruined crops by a long, severe drought[373]:

Wang Lung, sitting at the threshold of his door, said to himself that now surely something must be done. They could not remain here in this empty house and die. . . .There was such anger in him now as he often could not express. At times it seized him like a frenzy so that he rushed out upon his barren threshing floor and shook his arms at the foolish sky that shone above him, eternally blue and clear and cold and cloudless.

"Oh, you are too wicked, you Old Man in Heaven!" he would cry recklessly. And if for an instant he were afraid, he would the next instant cry sullenly, "And what can happen to me worse than that which has happened!"

DROUGHTS WHICH AFFECTED INTERNATIONAL RELATIONS

We have seen that an incident at a rain-making ceremony in Japan caused some official embarrassment[374], and we have noted that some aspects of the story of Busiris became distasteful both to Greeks and to Egyptians[375]. There was one drought which aroused serious international complications[376]. When the land of the Epidaurians was suffering from a period of scarcity, the oracle at Delphi advised them to make statues of olive wood in honor of Auxesia and Damia, two Cretan maidens to whom, as Pausanias tells us[377], the Troezenians gave divine honors after they had been stoned to death during an insurrection. It seems that only the Athenians had olive trees at this time. In order to secure one of them the Epidaurians had to agree to offer annual sacrifices to Athena Polias and Erectheus. When the statues had been made, the land of the Epidaurians again became productive.

Trouble was caused, however, when Aegina revolted from the Epidaurians and took away the statues. The Athenians demanded their surrender, and, on being refused, sent an expedition to secure them by force. As the invaders were trying to drag away the statues by the aid of ropes, thunder and an earthquake occurred. The invaders were seized with madness and began to kill one another, so that only one man survived.

ANCIENT RECOGNITION OF THE WORTHLESSNESS OF POPULAR IDEAS ABOUT DROUGHT

I have given elsewhere examples of ancient recognition that many popular beliefs about the weather are worthless and that the actions of the elements are to be ascribed to natural causes[378]. Similar statements about drought are more difficult to find. In De Morbo Sacro[379], which is found with the works of Hippocrates, persons who profess to know how to induce storms and fine weather and rains and droughts are accused of being impious, and of assuming that there are no gods, or, if there are, that they cannot ward off the greatest evils.

More than a millennium later, Agobard[380], whose *floruit* was in the ninth century, manifested even more impatience with weather quacks and challenged farmers to produce *tempestarii* to give evidence of their powers. He himself ascribed the control of the weather to the Christian deity.

In striking contrast with the Christian outlook is that

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[362]Busiris 6.13. [363]Isocrates, Busiris 6.12–13.

[364]Ovid, Fasti 4.247–348.

[365]*Ibidem*, 4.297–303. I give Sir James G. Frazer's translation, in The Loeb Classical Library.

[366]C. W. 18.165 D-166 A, 27.20 D, and the text connected with notes 114–121, above. [367]See note 194, above.

[368]Herodotus 4.184. See A Dictionary of Greek and Roman Geography, Edited by William Smith, under Atarantes, 1.252 (London, John Murray, 1878); Fiedler, 37.

[369]17.2.3.

[370]Apollodorus, Bibliotheca 2.5.10 (see note 233, above).

[371]3 (18). [372]17 (22). Compare 3 (18).

[373]Pearl S. Buck, The Good Earth, 79 (see note 271, above).

[374]See the quotation below the reference for note 347, above.

[375]See the text connected with notes 242–244, above.

[376]The account in the text above is the Athenian version of the story as given by Herodotus 5.82–85. For the Aeginetan version see Herodotus 5.87–88. See also Pausanias 2.30.4.

[377]2.32.2. [378]C. W. 18.157 B, 25.216 B-C, 27.28 B-C.

[379]Chapter 1.

[380]De Grandine et Tonitruis 13 (Migne, P. L., 104.155).

of Sophocles[381], who asserts that Zeus causes neither excessive rainfall nor severe droughts. Greek popular thought was as saturated with the idea of divine control of the weather as was that of the Jews of the Old Testament, but Sophocles and a few other Greeks managed to free themselves from the shackles of such thought.

In the sixth century the idea that the devil caused drought and bad weather was not infrequent among Christian teachers, so that, as we have seen[382], the synod at Braga had to take measures to try to eradicate it.

In the Georgics[383] Vergil, the poet of farmers and farming, has much to say about the weather. He was aware of the great losses husbandmen and vineyardists suffered from hail and drought, but still he felt that they were happy in their lot:

> O fortunatos nimium, sua si bona norint,
> agricolas, quibus ipsa, procul discordibus armis,
> fundit humo facilem victum iustissima tellus!

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ON BUYING A FARM

In his De Agri Cultura 1.1–4[1] Cato discusses the buying of a farm:

Praedium quom parare cogitabis, sic in animo habeto uti ne cupide emas neve opera tua parcas visere et ne satis habeas semel circumire. Quotiens ibis, totiens magis placebit quod bonum erit. Vicini quo pacto niteant, id animum advertito; in bona regione bene nitere oportebit. Et uti eo introeas et circumspicias, uti inde exire possis. Uti bonum caelum habeat, ne calamitosum siet, solo bono, sua virtute valeat. Si poteris, sub radice montis siet, in meridiem spectet, loco salubri. Operariorum copia siet, bonumque aquarium. Oppidum validum prope siet aut mare aut amnis qua naves ambulant, aut via bona celebrisque. Siet in his agris qui non saepe dominos mutant; qui in his agris praedia vendiderint, eos pigeat vendidisse. Uti bene aedificatum siet. Caveto alienam disciplinam temere contemnas. De domino bono bonoque aedificatore melius emetur. . . .

Mr. Fairfax Harrison[2] translates this as follows:

When you have decided to purchase a farm, be careful not to buy rashly; do not spare your visits and be not content with a single tour of inspection. The more you go, the more will the place please you, if it be worth your attention. Give heed to the appearance of the neighbourhood,—a flourishing country should show its prosperity. "When you go in, look about, so that, when needs be, you can find your way out."

Take care that you choose a good climate, not subject to destructive storms, and a soil that is naturally strong. If possible, your farm should be at the foot of a mountain, looking to the South, in a healthy situation, where labour and cattle can be had, well watered, near a good sized town, and either on the sea or a navigable river, or else on a good and much frequented road. Choose a place which has not often changed ownership, one which is sold unwillingly, that has buildings in good repair.

Beware that you do not rashly condemn the experience of others. It is better to buy from a man who has farmed successfully and built well.

Similar advice regarding the purchase of a farm is to be found in a bulletin entitled Selecting a farm, by E. H. Thomson, which is published by the United States Department of Agriculture, as Farmer's Bulletin No. 1088.

I quote from this Bulletin the following statements (the figures in round brackets refer to pages):

(3) The wise selection of a farm is vital to the success and satisfaction of farm life. . . .; (5) To achieve success in an ordinary farming venture it is almost essential to have these advantages: . . . Suitable conditions, both as to natural resources and environment and as to markets, to permit the development of a dependable organization of diversified activities . . . .; (7) . . . Make doubly sure that climatic conditions, such as rainfall, period of drought, late spring or early fall frosts, hailstorms, strong winds, hot winds, fogs, and humidity do not seriously limit the development of a diversified farm business. . . .; (12) The physical condition of the soil is an important matter and one which should receive first attention. . . .; (13) The experienced farmer in selecting a farm will generally look first at the source and dependability of the water supply, because he knows that a farm without an adequate supply of water is most undesirable. . . .; (14) . . . The character of the people in the neighborhood, their interests and ideals are also important. Very often an excellent farm is sold cheap because the owner does not care to live in a certain neighborhood. Disagreeable social features are not always apparent to the purchaser until some time after locating. Such conditions may not affect the productive possibilities of the farm, but do materially affect the home life and comfort of the farmer and his family and in that way make the farm undesirable; (15) Often it is a distinct advantage when purchasing a farm to buy the equipment, livestock, and materials already on the place. In this way an income is yielded almost from the outset, which usually makes possible the operation of the farm without a loss, and thus gives the newcomer a chance to work out changes and plans and at the same time have a self-sustaining farm business.

The advice of the government experts to-day does not differ fundamentally from the suggestions given by Cato two hundred years, more or less, before Christ to aid the prospective buyer of a farm to reach a right choice of property for purchase.

NATALIE HUNTER[3]

THE RISING OF COLD AGAIN

In THE CLASSICAL WEEKLY 26.99–100 Professor W. A. Oldfather, in a short note entitled The Rising of Cold, expressed the opinion that the idea of the rising of cold was "a bit of Greek folklore", and in support of this suggestion cited two passages from Aristotle[1]. He then said:

What is the origin of the erroneous notion? One might conjecture that it was based, at least in part, upon the relative coolness of cellars and caves, of spring-waters and well-waters, and the undoubted fact that, once the ground has been frozen to any depth, one needs, in lying upon it, to be protected by bedding more against the chill from below than against that from above. This is particularly noticeable in such countries as Alaska. . . .

[381] Fragment 524 (for the edition used see note 191, above).
[382] See the text connected with notes 161, 251, above.
[383] 2.458–460.

[1] For the text of Cato, De Agri Cultura see the edition by George Goetz (Leipzig, Teubner, 1922). This was a revision of an earlier edition, by Heinrich Keil.

[2] Roman Farm Management, The Treatises of Cato and Varro Done into English, With Notes of Modern Instances, By a Virginia Farmer (New York, Macmillan, 1922). The "Virginia Farmer" was Mr. Fairfax Harrison, President of the Southern Railway. <See page 23, notes 2, 3. C. K.>.

<[3] Miss Hunter is a student in MacMurray College, Jacksonville, Illinois. She has had experience of farm life. C. K.>.

[1] Professor Oldfather's quotations are as follows: Aristotle Problemata 23.34 (934 b, 21–23) ἢ ἐκ τῆς γῆς, ὥσπερ λέγεται, τὰ ψύχη ἄρχεται καὶ λανθάνει εἰσδυόμενα; and Problemata 934 b, 25–26) ἐν δὲ ταῖς τοιαύταις χώραις τὰ ψύχη κάτωθεν γίνεται.

Neither of these conjectures is an adequate explanation. Cellars, caves, spring-waters and well-waters are relatively cool only in summer; in winter they are relatively warm. Alaskan conditions of freezing of the subsoil are, of course, unknown in Greece, and therefore could hardly give rise to Greek folklore. There is, however, an obvious and adequate explanation, the widely occurring phenomenon of temperature inversion[3].

Usually, as is well known, temperature decreases with altitude. But frequently (especially in still, clear nights in a mountain region) ***temperature increases with altitude***; ***the lower of two places is colder than the higher***. The former condition is known as a norm, the latter as an inversion. Inversions, of course, are on the whole less frequent than norms, but still they are quite frequent in mountain regions and are often very much more intense than norms. Of two stations on the same slope, differing in altitude by 200 feet, the lower has been known to be 21 degrees colder than the higher[3]. On another occasion, on a longer slope, the valley-floor station was 31 degrees colder than the summit station[4]. On a short slope at Highlands, North Carolina, inversions of 5 degrees or more occurred on 191 nights in the year 1914[5]. On 115 of these nights the amount of inversion was 10 degrees or more; on 46 of them it was 15 degrees or more; on 13 of them it was 20 degrees of more[6].

These statements may serve to give some idea of the frequency and the extent of temperature inversions. Of course, it is only in recent times that these conditions have been subjected to rigorous measurement and statistical treatment; but the conditions must have been known from time immemorial, for they are abiding facts of nature and are sufficiently pronounced to obtrude themselves upon the attention of countrymen in mountain regions. A farm hand, starting out before sunrise on his daily chores, could hardly help noticing that frequently in walking down a slope he was coming in contact with appreciably lower temperatures. A fruit grower would be very certain to notice that trees on the valley floor were nipped by frost when trees on the adjacent slope escaped[7]. In Western North Carolina thermal belts have been matter of common talk almost ever since this section was settled; and thermal belts are nothing more than slope or summit areas which usually escape the late frosts that attack valley floors.

A drained lake-bottom is an intensified example of what is known as a frost-pocket. It can hardly be doubted that the Greek passages quoted by Professor Oldfather have their origin in experiences of temperature inversion. Then, as now, popular description of common occurrences lacked scientific precision. It is a fact of observation and experience that the human body, when brought in contact with very cold air, loses heat rapidly by radiation and conduction. We describe this fact by saying that 'the cold penetrates'. It is a fact of observation and experience that shortly before sunrise a valley floor is frequently very much colder than an adjacent slope or summit, whereas a few hours later the slope or summit is somewhat colder than the valley floor. The ancient Greeks described this fact by saying that *τὰ ψύχη κάτωθεν γίνεται*.

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[3]A vast amount of information on this subject is contained in Supplement No. 19 to The Monthly Weather Review (Washington, The Government Printing Office, 1923). This document of more than 100 pages, 9½ by 12 inches, is a tabulation and discussion of the results of a prolonged study, by the United States Weather Bureau, of thermal belts in Western North Carolina. Continuous thermographic records of temperature were made for four years (1913–1916) at 68 stations on sixteen selected slopes. Where in the notes below I have occasion to refer to this document, I do so by its code number, W. B. 796, with figures following that indicate pages of the document.

[4]At Highlands, North Carolina, May 20, 1914: see W. B. 796, 57.

[5]At Gorge, North Carolina, November 13, 1913, 6 A. M.: see W. B. 796, 59.

[6]At Ellijay, North Carolina, the number of nights that showed temperature inversion was 196. [6]See W. B. 796, 63.

[7]In a letter from a North Carolina fruit grower to Mr. W. N. Hutt, formerly State Horticulturist, and published by Mr. Hutt (W. B. 796, 106), the following passage occurs: "One farmer in this county has a cherry tree through which the frost line passes about half way to the top, and on one occasion a full crop of cherries was produced above and none below the line".

In a letter which accompanied this paper Mr. Valentine wrote as follows:

"It is hardly possible to doubt that the two passages of Aristotle to which Professor Oldfather alludes are expressions, in popular language, of the well-known phenomenon of temperature inversion. This phenomenon is quite well known to people of rural habits in mountain regions; but it may easily be unfamiliar to dwellers in a level country and to those dwellers in a mountain region whose habits do not get them out of doors between midnight and sunrise (farm hands naturally are up and about before sunrise). To prove my point I thought it necessary to cite some authentic records in order that I might escape the suspicion of being the victim of folklore.

There can be no doubt that loose popular thinking among the ancient Greeks, as with us, conceived of cold *affirmatively*, and not merely as the absence of heat; and the very intense inversions of the normal distribution of heat which are very common in mountain regions would be popularly described as a rising of cold". C. K.>.